

DIELECTRIC MATERIAL INCLUDING PARTICULATE FILLER

ABSTRACT OF THE DISCLOSURE

5 A dielectric substrate useful in the manufacture of printed wiring boards is disclosed wherein the dielectric substrate comprises at least one organic polymer having a T_g greater than 140°C and at least one filler material. The dielectric substrate of this invention has a dielectric constant that varies less than 15% over a temperature range of from -55 to 125°C. Additionally, a method for producing integral capacitance components for inclusion within printed circuit boards. Hydrothermally prepared

10 nanopowders permit the fabrication of very thin dielectric layers that offer increased dielectric constants and are readily penetrated by microvias. Disclosed is a method of preparing a slurry or suspension of a hydrothermally prepared nanopowder and solvent. A suitable bonding material, such as a polymer is mixed with the nanopowder slurry, to generate a composite mixture that is formed into a dielectric layer. The dielectric layer may be placed upon a conductive layer prior to curing, or conductive layers may be

15 applied upon a cured dielectric layer, either by lamination or by metallization processes, such as vapor deposition or sputtering.